

region on the morning of the 7th. It moved eastward to the Missouri Valley, where it was central on the morning of the 8th, thence northeasterly, passing over Lake Superior and down the St. Lawrence Valley, disappearing on the evening of the 10th over the Canadian Maritime Provinces.

On the 6th an energetic storm developed over the western North Atlantic. It reached its maximum strength on the morning of the 7th, with a barometer reading of 29.54 inches, and a maximum wind velocity from the northeast of 48 miles per hour on the Maine coast. This storm diminished in energy and passed eastward over the Atlantic Ocean from the 7th to the 10th.

From the 7th to the 10th the eastern districts were occupied by the area of high pressure that first appeared in Alberta on the evening of the 3d, and drifted slowly eastward, reaching the Lake region by the 6th. On the morning of the 10th pressure had fallen over the East and South, and a faint depression appeared off the North Carolina coast. This depression apparently moved northeastward over the Atlantic without affecting the coast districts.

On the 11th there began a series of extremely rapid barometric movements across the northern portion of the country. At that time an area of low pressure of considerable magnitude was central off the Washington coast, with a barometer reading of 29.00 inches at Tacoma. On the next morning this depression had moved to Iowa, a distance of about 1500 miles in twenty-four hours. On reaching Iowa, it curved northeastward, passing over Lake Superior on the evening of the 12th and disappearing north of that region on the morning of the 13th. On the evening of the 13th, a second North Pacific disturbance appeared off the Washington and Oregon coasts with a barometer reading of 29.50 inches at Portland. This storm increased in energy and was central on the morning of the 14th off the Washington coast, with lowest pressure, 29.30 inches, at Seattle. On the evening of that date, an offshoot of the main low appeared over northeastern Nevada, and in twelve hours it had moved to western Kansas. Its course was thence northeasterly, reaching lower Michigan on the morning of the 16th. Its rate of progression on the 16th, 17th, and 18th was greatly diminished, and it passed off the Atlantic coast on the last-named date as a trough-like depression, with barometer readings of 29.80 to 29.90 inches. The period of rapid movement was brought to a close by the southeasterly movement of an area of high pressure that first appeared on the morning of the 15th in Alberta. Zero temperatures, with snow, prevailed throughout Alberta and northern Montana, and the high spread southeasterly and southward along the northern Rocky Mountain slope and over the eastern slope, reaching northern Texas by the morning of the 17th, and the Gulf coast and Ohio Valley by the morning of the 18th. By the morning of the 19th it had reached the Atlantic coast districts and northern Florida. Frost occurred on the Gulf coast and in northern Florida on the 19th, with minimum temperatures of 30° and 36° at New Orleans and Mobile, respectively, the lowest on record for the second decade of November. The pressures recorded in connection with the advance of this cold wave were remarkably high. A reading of 31.00 inches was recorded at Havre, Mont., on the morning of the 17th, and of 30.80 inches at Dodge City, Kans., on the morning of the 18th. The barometric reduction tables that have been in use since January 1, 1902, give sea-level pressure on the Plateau and in the Rocky Mountain regions that are probably two to three-tenths of an inch lower than those obtained in this case by using the Hazen tables. It is, therefore, impossible to make a direct comparison of the recorded barometric heights during the progress of the cold wave above noted with those that have previously occurred in the same regions. This high dominated the weather of the United States from the 16th to the 22d, although in the meantime an area of low pressure had advanced

from the Oregon coast, where it was central on the 18th, to the Lake region, where it disappeared on the morning of the 22d.

The second series of rapid storm movement across the northern border began on the morning of the 23d. On the evening of the 22d a shallow depression covered Minnesota. This depression developed considerably during the night, and by the morning of the 24th it had moved to the lower St. Lawrence Valley, with lowest pressure, 29.42 inches, at Father Point and Quebec, respectively. It remained almost stationary over the Canadian Maritime Provinces during the 25th and gradually filled up during the next forty-eight hours.

A faint depression appeared on the morning map of the 24th, central over New Mexico. This depression moved slowly southeastward, and thence eastward along the Gulf coast, reaching Florida by the evening of the 25th, and disappearing over the Atlantic on the next day.

An area of high pressure that had been slowly moving south-eastward from the eastern slope region, reached the Mississippi Valley by the evening of the 26th, and continued its south-eastward movement during the 27th. It brought frost and freezing temperatures in the Gulf States and northern Florida on the mornings of the 27th and 28th. On the last-named date, minimum temperatures of 26° at Jacksonville, 32° at Tampa, and 36° at Jupiter were recorded. These values were as low, or lower, than any that had heretofore been recorded during the last decade of November.

The advance of lows from the North Pacific continued uninterrupted until the end of the month. Pressure was low on the north Pacific coast and over British Columbia on the 25th and 26th. By the evening of the 26th it had fallen over the Missouri Valley, and by the evening of the next day a well-marked depression was central over western Minnesota. This depression increased in intensity during the next twelve hours and moved eastward, the southern end much faster than the northern, so that by the morning of the 29th, one center appeared off the Carolina coast and a second center over the northern portion of lower Michigan. The coast storm moved northeastward as an independent area of low pressure and the Lake region depression followed in its rear at a much slower rate of progression.

The winter type of high pressure over the Plateau region was established on the morning of the 26th and continued until the close of the month.

BOSTON FORECAST DISTRICT.

In many respects November was an ideal month, as there was a preponderance of fair weather, with fifteen clear days. The first half of the period was warm, while during the last half the temperature was below normal, making the monthly mean somewhat below the normal. The precipitation was decidedly deficient, except in extreme eastern Maine where it was about the normal. There were no severe or long-continued high winds, and, therefore, no damage and little delay to shipping. Storm warnings were displayed on the 5th, 7th, 11th, 15th, 24th, and 27th. No storms occurred without warnings.—*J. W. Smith, District Forecaster.*

NEW ORLEANS FORECAST DISTRICT.

The month was remarkable in some respects. Very little rain fell in any part of the district during the month; rain conditions appeared on the map several times, but they passed off without rain or only inappreciable amounts.

Unprecedented cold weather for the season of the year prevailed over parts of the district on the 18th and 19th. Cold-wave warnings were ordered for Oklahoma on the 16th and were extended to the Gulf coast during the 17th and 18th. Sugar planters and truck growers in Louisiana and Texas were warned on the morning of the 17th to prepare for tem-